



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named
Inventor : Hugh Mcloone
Appln. No. : 09/286,739
Filed : April 6, 1999
For : COMPUTER INPUT DEVICE WITH
DIGIT SUPPORT AND NATURAL
POSITION ACTUATORS

Appeal No. _____

Group Art Unit: 2674

Examiner: A. Zamani

Docket No.: M61.12-0124

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MAY 27 2003

**TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION - 37 C.F.R. § 192)**

Technology Center 2600

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21st DAY OF May, 20 03
Theodore M. Magee
PATENT ATTORNEY

Sir:

Transmitted herewith in triplicate is the Appeal Brief in
this application with respect to the Notice of Appeal filed on March
21, 2003.

FEE STATUS

[---] Small entity status under 37 C.F.R. §§ 1.9 and 1.27
is established by a verified statement.

FEE FOR FILING APPEAL BRIEF

Pursuant to 37 C.F.R. 1.17(c) the fee for filing the
Appeal Brief is \$320.00.

The Director is authorized to charge any additional fees
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Respectfully submitted,

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21st DAY OF May, 2003
Theresa M. [Signature]
PATENT ATTORNEY

Sir:

This is an appeal of the final rejection of claims 1, 3, 5-12, 14, 16-18 and 25-31 that was reported in the Office Action of October 22, 2002.

REAL PARTY IN INTEREST

Microsoft Corporation, a corporation organized under the laws of the state of Washington, and having offices at One Microsoft Way, Redmond, Washington 98052, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as assignee in an Assignment recorded on Reel 010049, frame 0349.

RELATED APPEALS AND INTERFERENCES

Appellant knows of no appeals or interferences that would directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF THE CLAIMS

Claims 2, 4, 13, 15 and 19-24 have been cancelled.

Claims 1, 3, 5-12, 14, 16-18 and 25-31 are pending, rejected, and appealed.

STATUS OF AMENDMENTS

An Amendment After Final was filed on December 23, 2002, which amended claim 1. An Advisory Action dated January 27, 2003 indicated that the amendment to claim 1 would be entered for the purposes of appeal. The form of claim 1 after that amendment is found in the list of Claims on Appeal in Appendix A.

SUMMARY OF INVENTION

A computer mouse 100 is provided with a primary button 102 a secondary button 104 and two side buttons 108 and 110. The two side buttons are located above a thumb pinching area 112 located on the side of the mouse 100 (See Figure 2). The mouse also includes a convex support slope 116 that provides a sloping surface to support the respected distal phalanges 117 and 119 of the ring finger and little finger of the user while the user's middle finger is positioned over the secondary button 104.

Side buttons 108 and 110 together form a button shape 194, also referred to as a shaped button assembly that is contoured to substantially fit or conform to the natural space between a user's index finger and their thumb when the index finger is positioned on contact point 154 of primary button 102. Button 108 is located closer to the front 101 of the mouse than button 110. Side buttons 108 and 110 have outer surfaces that are level with the surface of the upper casing that surrounds the two buttons.

Further embodiments in the invention include a mouse

with a wheel 106 that includes at least 50 ribs such as ribs 402 and 404 of Figure 9. Under some embodiments, these ribs have semi-circular cross-sections with specific dimensions. See pages 16 and 17 of the specification for a detailed description of the ribs.

ISSUES

Does the combination of Zenz (U.S. Patent No. 5,841,425), Siddiqui et al. (U.S. Patent No. 6,097,371) and Edwards et al. (U.S. Patent No. 6,362,811) render claims 1, 3, 5-12, 14, 16-18 or 25-31 obvious under 35 U.S.C. §103(a)?

GROUPING OF CLAIMS

Appellants group the claims on appeal as follows:

- Group 1 - Claims 1 and 6
- Group 2 - Claim 3
- Group 3 - Claim 5
- Group 4 - Claims 7, 10 and 11
- Group 5 - Claim 8
- Group 6 - Claim 9
- Group 7 - Claim 12
- Group 8 - Claims 14 and 16-18
- Group 9 - Claims 25 and 27
- Group 10 - Claim 26
- Group 11 - Claim 28
- Group 12 - Claim 29
- Group 13 - Claim 30
- Group 14 - Claims 31

ARGUMENT

All of the pending claims have been rejected under 35 U.S.C. §103(a) as being unpatentable over Zenz (U.S. Patent No. 5,841,425) in view of Siddiqui et al. (U.S. Patent No. 6,097,371, hereinafter Siddiqui) and further in view of Edwards et al. (U.S.

Patent No. 6,362,811, hereinafter Edwards).

Zenz discloses two alternative input devices: a mouse input device and trackball input device. Each includes sensors for determining whether the user is holding the input device with their left hand or with their right hand. In the mouse embodiment, the sensor is located in the natural gripping position for the user's thumb. Thus, when the user is holding the mouse, their thumb touches the sensor (See Figure 3C). In the trackball embodiment, a sensor is located in a concave portion of the trackball device that is designed to accept the user's ring finger.

Siddiqui discloses a two button mouse with a depressable wheel. Siddiqui does not show or suggest a side button.

Edwards discloses a three button mouse designed to make the pressing of a finger button less stressful by placing the thumb and index finger in an orientation where the user squeezes their thumb and finger together to press the finger button.

Group 1 - Claim 1

Independent claim 1 is directed to a mouse input device for a computer system. The mouse is capable of being moved across a working surface to move a displayed object on a computer display. The mouse includes an upper casing and a bottom surface designed to face the working surface. A thumb pinching area is located on a side of the mouse proximate the bottom surface. The mouse also includes a primary button, a secondary button and at least two side buttons. The at least two side buttons are located above the thumb pinching area in a direction away from the bottom surface.

The combination of cited references does not show a mouse that includes two buttons located above a thumb pinching area as well as a primary button and a secondary button because in

combination, the references only show three finger buttons and none of the references show a side button located above a thumb pinching area.

In rejecting claim 1, the Examiner relied primarily on Zenz. (Appellants note that in the first sentence of paragraph 3 of the final rejection, the Examiner refers to Siddiqui. However, the reference numbers in the remainder of that sentence are only found in Zenz. As such, Appellants assume that the Examiner meant to reference Zenz.) In particular, the Examiner asserted that buttons 36 and 40 of Zenz represent side buttons located above a thumb pinching area 64.

Appellants first note that the rejection makes reference to two different embodiments of Zenz. The first embodiment is a mouse embodiment shown in Figs. 3A-3D. The second embodiment is a trackball embodiment shown in Figs. 4A-4E. Because Zenz designates its buttons with the same numbers (36 and 40) in both embodiments, it is difficult to tell if the Examiner is referring to the mouse embodiment or the trackball embodiment.

For the sake of completeness, Appellants address each separately.

In the mouse embodiment of FIGS. 3A-3D, the user's thumb is positioned on the side of the mouse in a thumb location 64, while the user's index finger is placed over button 40 and their ring finger is placed over button 36. When held in this manner, button 36 provides primary functions and button 40 provides secondary functions. (See Zenz, Col. 8, lines 22-25, and lines 44-49). Thus, button 36 is the primary button and button 40 is the secondary button.

In the rejection, the Examiner designated buttons 36 and 40 as side buttons and not as the primary and secondary buttons. This interpretation of these buttons is counter to how Zenz describes them. In addition, if area 64 is considered the thumb pinching area, it is clear that buttons 36 and 40 are not

located above the thumb pinching area as required by claim 1 but are instead aligned with the thumb pinching area. (See Zenz, FIG. 3C).

However, even if we accept the Examiner's designation of buttons 36 and 40 as the side buttons of claim 1, Zenz then lacks the primary and secondary buttons of claim 1. Buttons 36 and 40 cannot be both two side buttons and a primary and secondary button since claim 1 requires four buttons and not just two buttons. The Zenz mouse only shows three buttons so it does not show the four buttons required by claim 1.

Appellants note that Zenz states that any number of buttons could be present on a mouse at column 5, lines 23-24. However, it does not indicate where these buttons could be located so that a user could easily manipulate them without accidentally pressing them while moving the mouse. One of the major problems facing mouse designers is creating a mouse that allows users to easily actuate buttons without accidentally actuating the buttons when trying to move the mouse. Given the small amount of real estate available on a mouse, it is difficult to find a position for additional buttons on the mouse without interfering with the movement of the mouse. For example, viewing the Zenz mouse in FIGS. 3C and 3D, it appears that there is no space for additional buttons to be placed between the user's thumb and the user's index finger.

Thus, this statement appears to be a "catch-all" phrase designed to give the Zenz patent coverage in the event that someone in the future, such as the present inventors, invents a way to place more buttons on a mouse while not interfering with the movement of the mouse. Zenz does not teach any mouse design that would permit more buttons to be on the mouse without interfering with the movement of the mouse. As such, the mouse embodiment of Zenz does not show or suggest the invention of claim

1, which includes a primary button a secondary button and at least two side buttons located above a thumb pinching area in a direction away from a bottom surface.

The trackball embodiment of Zenz also fails to show or suggest the invention of claim 1. In the trackball embodiment of FIG. 4E, the user's thumb is positioned over a button 36 while the user's middle finger is placed over button 40. Because the user's thumb is positioned over button 36, button 36 is the thumb pinching area. However, if button 36 is the thumb pinching area, then the trackball does not include two side buttons located above the thumb pinching area since the trackball only includes buttons 36 and 40.

In the office action, the Examiner asserted that area 138 of FIG. 4E was a thumb pinching area. However, this area is designed to accept the user's little finger. (See Zenz, Col. 6, lines 61-62). Even if area 138 were considered a thumb pinching area, Zenz does not show two side buttons located above this area.

It only shows buttons 36 and 40, which appear to be aligned with this area, and are not above this area. Even if buttons 36 and 40 were considered side buttons, the trackball embodiment would then lack a primary and secondary button as required by claim 1.

Siddiqui and Edwards also fail to show a mouse that has primary and secondary buttons as well as two side buttons located above a thumb pinching area. In particular, neither reference shows or suggests at least two side buttons located above a thumb pinching area. In Edwards, the only buttons provided are finger buttons provided for the index, middle and ring fingers. In Siddiqui, the only buttons provided are the primary and secondary button for the index and middle or ring finger, and a depressible wheel located between the two buttons. Note that because Siddiqui shows its primary and secondary buttons as extending down the side of the mouse, there is no room for placing a side button above the

thumb pinching area. As such, it would not be possible to simply add two side buttons to Siddiqui.

Since none of the cited references show two side buttons located above a thumb pinching area as well as a primary button and a secondary button, the combination of Zenz, Siddiqui and Edwards does not show or suggest the invention of claim 1. As such, claims 1 and 6 are patentable over the cited references.

Group 2 - Claim 3

Dependent claim 3 depends from claim 1 but does not stand or fall with claim 1 because it includes a further limitation that is not shown or suggested in the cited art. In particular, in claim 3, the at least two side buttons are shaped to substantially conform to a space between the user's thumb and the user's index finger when the user's thumb is positioned on the thumb pinching area and the user's palm is in contact with a contact point.

None of the cited references show or suggest two side buttons that conform to a space between a user's thumb and a user's index finger. In the final Office Action, it was asserted that buttons 36 and 40 of Zenz were shaped to substantially conform to a space between a user's thumb and their index finger. However, buttons 36 and 40 in Figures 3A-3D are clearly not shaped so as to conform to the space between a user's thumb and their finger and buttons 36 and 40 of Figures 4A-4D are clearly not shaped to conform to the space between a user's thumb and their index finger. The difference between Zenz and the invention of claim 3 can clearly be seen by comparing Figure 2 of the present application where buttons 108 and 110 are shaped to substantially conform to a space between a user's thumb and their index finger and buttons 36 and 40 of Figures 3C, 3D, 4D and 4E of Zenz.

Edwards and Siddiqui also fail to show side buttons

that are shaped to substantially conform to a space between a user's thumb and their index finger. As such, none of the references show or suggest two side buttons with such a shape.

Since none of the references show two side buttons that are shaped to substantially conform to a space between a user's thumb and index finger, the combination of these references does not show or suggest the invention of claim 3. Therefore, claim 3 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 3 - Claim 5

Claim 5 depends from claim 1 but does not stand or fall with claim 1 because it includes a further limitation that is not shown in the cited references. In particular, claim 5 includes a limitation where the user's thumb avoids contacting the at least two side buttons when the user's thumb rests in the thumb pinching area.

As noted above for claim 1, none of the cited references show at least two side buttons located above a thumb pinching area. In addition, in the three cited references, buttons are positioned such that if a digit is used to actuate a button, it will be positioned over at least one button when the user is moving the input device. For example, in Zenz, the user's fingers are positioned over buttons 36, 38 and 40 when the user is moving the mouse as shown in Figure 3C. Similarly in Edwards, the user's index, middle and ring fingers are positioned over the buttons when the mouse is moved as shown in Figure 8. Lastly in Siddiqui, the user's middle finger is positioned over a secondary button while the index finger is positioned over either the primary button or the depressible wheel. Thus, in all cases, these references show that if a digit is used to actuate a button, the digit should be positioned over at least one of the buttons that it can actuate.

In claim 5, however, the user's thumb rests in a thumb pinching area without contacting the at least two side buttons. This is done to avoid actuating the side buttons while trying to move the mouse. None of the cited references show or suggests that such positioning is necessary. Instead, these references indicate that if buttons are provided, they should be placed directly below a digit.

In light of the fact that none of the references show or suggest placing two side buttons in a position where the thumb avoids contact with the side buttons when the thumb rests in a thumb pinching area, claim 5 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 4 - Claims 7, 10 and 11

Independent claim 7 is directed to a mouse with limitations that are substantially different from the limitations of claim 1 and therefore does not stand or fall with claim 1.

In claim 7, a mouse includes a thumb gripping position located on the side of a mouse and a primary button positioned so as to be capable of being actuated by a user's index finger when the user's thumb is located on the thumb gripping position. At least one side button is positioned so that a gap between the user's thumb and their index finger is reduced when the user moves their thumb from the gripping position to actuate the side button. A surface of the thumb gripping position is substantially level with a surface of the at least one side button along a boundary between the gripping position and the side button.

None of the cited references show a mouse with a side button such as the mouse found in claim 7. In Zenz, there is no side button provided between the user's index finger and their thumb such that the space between the finger and thumb is reduced when the user actuates the button with their thumb. In Figures 3C

and 3D, there is no button between the user's thumb and the index finger. Likewise, in Figures 4D and 4E, there is no button between the user's thumb and index finger. In Figures 4D and 4E, there is a button directly below the user's thumb. However, a space between the user's thumb and their index finger is not reduced when the user actuates this button since the button is already directly below the user's thumb. Appellants also note that the embodiments of Figures 4D and 4E do not show a mouse, but instead show a stationary trackball.

Siddiqui and Edwards also fail to show a side button that when actuated by a user's thumb causes a space between the user's thumb and index finger to be reduced. In Edwards, the only buttons shown are shown directly below the user's fingers, and as such are activated by the user's finger and not by their thumb. Similarly, Siddiqui only shows buttons that are positioned below the user's index finger or middle finger and that are only actuated by the user's index finger or middle finger. There are no side buttons between the primary button and the thumb gripping position in Siddiqui.

Since none of Zenz, Siddiqui or Edwards show a side button positioned so that a gap between the user's thumb and their index finger is reduced when the user's thumb is moved to actuate the button, the combination does not show or suggest such a side button. As such, claim 7 and claims 10 and 11, which depend therefrom, are patentable over the cited combination.

Group 5 - Claim 8

Claim 8 depends from claim 7 but does not stand or fall with claim 7 because it includes a further limitation to having at least two side buttons which is not shown or suggested in the cited art.

As mentioned above for claim 7, none of Zenz, Siddiqui

or Edwards show a side button positioned so that a gap between a user's thumb and the user's index finger is reduced when the user's thumb is moved to actuate the side button. As such, none of these references show two buttons positioned in this manner. Note that positioning two buttons between a thumb gripping position and a primary button is even less obvious than placing one side button in this position since two side buttons require more space than one side button.

In light of the fact that none of the references show or suggest two side buttons located between a thumb gripping position and a primary button, the invention of claim 8 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 6 - Claim 9

Dependent claim 9 depends from claim 8 but does not stand or fall with claim 8 because it includes a further limitation that is not shown or suggested in the cited art.

In claim 9, the two side buttons are shaped to substantially conform to the shape of a gap between the user's thumb and index finger. None of the references show or suggest shaping two side buttons in this manner. In particular, Figures 3C, 3D, 4A, 4B, 4D, and 4E of Zenz do not show or suggest buttons with such a shape. This can be seen clearly by comparing the figures in Zenz with Figure 2 of the present application where buttons 108 and 110 are shown to have a shape that substantially conforms to the shape of a gap between a user's thumb and the user's index finger.

Since none of the cited references show or suggest at least two side buttons shaped to substantially conform to the shape of a gap between the user's thumb and index finger, claim 9 is patentable over the cited combination of Zenz, Siddiqui and Edwards.

Group 7 - Claim 12

Claim 12 depends from claim 8 but does not stand or fall with claim 8 because it includes a further limitation that is not shown in the cited art. In particular, the two side buttons of claim 12 comprise a forward button and a rear button where a majority of the forward button is closer to the front of the mouse than a majority of the rear button.

None of the cited references show or suggest two side buttons with one button being closer to the front of the mouse than the other button. The Examiner has not cited any particular section of the references to support the rejection of claim 12. As such, it is clear that none of the references show or suggest two side buttons with the orientation found in claim 12. Therefore, claim 12 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 8 - Claims 14, 16, 17 and 18

Independent claims 14 and 18 include different limitations from independent claims 1 and 7 and as such do not stand or fall with claims 1 or 7.

Independent claim 14 provides a mouse that can convey a signal indicative of movement of the mouse across a working surface. The mouse includes a metacarpophalangeal ridge support, a secondary button, and a ring finger and little finger convex support slope that is separate from the secondary button. Each surface point of the support slope has a normal that at least partially points away from the working surface.

Independent claim 18 provides a mouse with a secondary button, a ring finger distal phalanx contact area comprising at least one convex surface and a little finger distal phalanx contact area comprising a convex surface. The ring finger distal phalanx contact area is separate from the secondary button.

None of the cited references show or suggest the limitations of claims 14 and 18. In particular, none of the references show a convex support for a user's ring finger and little finger. As such, the combination of references does not show or suggest a convex support for a user's ring finger and little finger.

In addition, there is no suggestion or motivation for modifying the cited references to form a mouse with a convex support for the user's ring finger and little finger.

For example, there is no motivation to modify the Zenz mouse to add a ring finger support surface that is separate from a button on the mouse. In Zenz, the user's ring finger is supported on a button so that the user can easily actuate the button with their ring finger. If a support was provided apart from the button, the user's ring finger would be in an unnatural position when it was resting on the support or when it was actuating the button.

Similarly, Edwards provides a concave button to support the user's ring finger. As such it would not be obvious to add a convex support for the ring finger because it would make it more difficult to actuate the ring finger button and would place the user's hand in an uncomfortable position. As discussed in Edwards, those skilled in the art avoid designs that place the hand in unnatural positions because these positions strain the user's hand and can cause soft tissue injuries.

Since none of the cited references show a convex support for a ring finger that is separate from a button or a convex support for a little finger, the combination of these references does not show or suggest the inventions of claims 14, 16, 17, and 18. As such, these claims are patentable over the cited references.

Group 9 - Claims 25 and 27

Independent claim 25 is directed to a mouse with a bottom surface designed to face a working surface over which the mouse is moved. A wheel is located in an upper housing of the mouse and comprises at least 50 ribs along its outer surface. Claim 25 stands apart from the claims discussed above because those claims do not include the limitation to a wheel with at least 50 ribs.

None of the cited references show or suggest a wheel with at least 50 ribs along its outer surface. Of the three references, only Siddiqui shows a wheel on a mouse. However, Siddiqui does not discuss that the mouse may have ribs and does not discuss the number of ribs that should be used.

The large number of ribs on the wheel of the mouse of claim 25 provides several benefits that are not shown or suggested in the cited art. In particular, the large number of ribs increases the friction between the wheel and the user's finger without creating a surface that feels uncomfortable to the user. Because there are so many ribs, the user's finger feels as if it is in contact with a uniform surface.

Since none of the cited references show or suggest ribs on a mouse wheel the combination is not able to show or suggest the use of at least 50 ribs along the outer surface of a mouse wheel. As such, the invention of claim 25, and claim 27, which depends therefrom, is patentable over the combination Zenz, Siddique and Edwards.

Group 10 - Claim 26

Claim 26 depends from claim 25 but does not stand or fall with claim 25 because it includes a further limitation that is not shown in the cited art. In particular, claim 26 includes 120 ribs on the wheel.

As noted above, none of the cited references show or suggests ribs along a wheel and as such are not capable of suggesting 120 ribs placed along the surface of a wheel. As such, claim 26 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 11 - Claim 28

Claim 28 depends from claim 25 but does not stand or fall with claim 25 because it includes a further limitation that is not shown in the cited art. In particular, under claim 25, each rib is .02 inches high.

None of the cited art shows or suggests a rib that is .02 inches in height. As noted above, only Siddiqui shows or suggest a wheel in a mouse and Siddiqui does not discuss ribs on its wheel.

Since none of the references discuss ribs on a wheel, none of them are capable of suggesting a rib with a height of .02 inches. As such, claim 28 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 12 - Claim 29

Claim 29 depends from claim 25 but does not stand or fall with claim 25 because it includes a further limitation that is not shown in the cited art.

Under claim 29, each rib has a cross-sectional shape that is the combination of a first quarter-circle contiguous with a half circle contiguous with a second quarter-circle. This shape is not shown or suggested in the cited art.

As noted above, none of the art discusses ribs on a mouse wheel. As such, none of these references is capable of suggesting the particular shape for a rib found in claim 29. As such, claim 29 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 13 - Claim 30

Claim 30 depends from claim 29 but does not stand or fall with claim 29 because it includes an additional limitation that describes the size of the first quarter-circle that forms a rib.

In particular, under claim 30, the first quarter-circle is based on a circle having a center above a point half-way between two ribs at a distance of .16 inch. Since none of the cited references discuss ribs, none of them show or suggest the dimension of a first quarter-circle of a rib found in claim 30. As such, claim 30 is patentable over the combination of Zenz, Siddiqui and Edwards.

Group 14 - Claim 31

Claim 31 depends from claim 30 but does not stand or fall with claim 30 because it includes an additional limitation that is not shown in the cited art.

Under claim 31, the half circle portion of the rib is based on a circle having a center below a peak of a rib at a distance of .16 inch. This particular dimension for a rib is not shown or suggested in the cited art because none of the cited references even discuss ribs, much less a particular dimension for a rib. As such, claim 31 is patentable over the cited combination of Zenz, Siddiqui and Edwards.

CONCLUSION

In conclusion, claims 1, 3, 5-12, 14, 16-18 and 25-31 are not shown or suggested in the combination of Zenz, Siddiqui and Edwards. Appellants therefore request reversal of the Examiner's rejection of claims 1, 3, 5-12, 14, 16-18 and 25-31.

Respectfully submitted,

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